

WHAT IS CLAIMED IS:

1 1. For use in a data communication network including a wireless link for
2 the transfer of data packets from a first machine to a second machine, the wireless link
3 having a multitude of base stations which may be selectively designated to receive data
4 packets from the first machine and a subscriber unit connected to the second machine for
5 receiving data packets from a selectable one of the base stations, a method of maintaining
6 data throughput during a handoff from a first one of the base stations to a second one of the
7 base stations as requested by the subscriber unit, which comprises the steps of:

8 uniquely designating only the first and second base stations for simultaneous
9 receipt of the data packets from the first machine in response to the handoff request;

10 storing the data packets received by the second base station after such handoff
11 request but before handoff is executed; and

12 forwarding a selected subset of the stored data packets to the subscriber unit
13 after handoff is executed.

1 2. A method as defined in claim 1, further comprising the step of
2 discontinuing the designation of the first base station to receive data packets from the first
3 machine after handoff is executed.

1 3. A method as defined in claim 1, in which the data communications
2 network is adapted to operate with the Mobile IP protocol, and in which the designating step
3 comprises registering the first and second base stations as simultaneous Mobile IP bindings

4 for the subscriber unit.

1 4. For use in a wireless communication link adapted to operate in
2 accordance with the Mobile IP protocol and comprising, in combination, a subscriber unit
3 constituting a Mobile IP mobile node, a Mobile IP home agent associated with the mobile
4 node's home network, and first and second base stations respectively associated with first
5 and second Mobile IP foreign agents through which data packets may be selectively routed
6 from the home agent, the first foreign agent being initially registered with the home agent as
7 a first mobility binding between the subscriber unit and the home agent, the subscriber unit
8 receiving such data packets from a selected one of the first and second base stations, a
9 method for maintaining data throughput during a handoff of the subscriber unit from the
10 first base station to the second base station as requested by the subscriber unit, which
11 comprises the steps of:

12 registering the second foreign agent as a second mobility binding between the
13 subscriber unit and the home agent in response to the handoff request, the second mobility
14 binding constituting a simultaneous binding with the first mobility binding to allow receipt
15 of the data packets from the home agent by both the first and second foreign agents;

16 storing a sequence of data packets received by the second foreign agent from
17 the home agent after such simultaneous binding registration but before handoff is executed;
18 and

19 forwarding the stored data packets to the subscriber unit via the second base
20 station starting with a predetermined data packet in the stored sequence after handoff is

21 executed.

1 5. A method as defined in claim 4, further comprising the step, prior to the
2 registration step for the second mobility binding, of transmitting a request from the subscriber
3 unit to the home agent to register the second foreign agent as the second mobility binding.

1 6. A method as defined in claim 4, further comprising the step of de-
2 registering the mobility binding of the first foreign agent with the home agent after handoff is
3 executed.

1 7. A method as defined in claim 6, further comprising means associated
2 with the subscriber unit for generating a handoff complete signal after handoff is executed, and
3 means for applying the handoff complete signal to the first and second base stations.

1 8. A method as defined in claim 7, in which the handoff complete signal
2 includes a first portion constituting a Mobile IP Registration Request with a lifetime value equal
3 to zero, and in which the de-registering step comprises means including the applying means for
4 transmitting the first signal portion to the home agent.

1 9. In a wireless communication link adapted to operate in accordance with
2 the Mobile IP protocol, the link having a mobile subscriber unit constituting a Mobile IP mobile
3 node and in selective radio communication with first and second base stations for receiving data

4 packets therefrom, the subscriber unit being adapted to generate a handoff request signal, a
5 handoff start signal and a handoff complete signal in connection with a handoff of the
6 subscriber unit from the first base station to the second base station:

7 a Mobile IP home agent associated with the mobile node's home network;
8 first and second Mobile IP foreign agents respectively associated with the first
9 and second base stations and through which data packets may be selectively routed from the
10 home agent, the first foreign agent being registered before the handoff with the home agent as
11 a first mobility binding between the subscriber unit and the home agent;

12 means responsive to the handoff request signal for registering the second foreign
13 agent as a second mobility binding between the subscriber unit and the home agent, the second
14 mobility binding constituting a simultaneous binding with the first mobility binding to allow
15 receipt of the data packets from the home agent by both the first and second foreign agents;

16 means responsive to the handoff start signal for storing a sequence of data
17 packets received by the second foreign agent from the home agent after such simultaneous
18 binding registration; and

19 first means responsive to the handoff complete signal for forwarding the stored
20 data packets to the subscriber unit via the second base station starting with a predetermined data
21 packet in the stored sequence.

1 10. A system as defined in claim 9, further comprising second means
2 responsive to the handoff complete signal for de-registering the mobility binding of the first
3 foreign agent with the home agent.